



NORTH ATLANTIC TREATY ORGANISATION

HEADQUARTERS SUPREME ALLIED COMMANDER
TRANSFORMATION 7857 BLANDY ROAD, SUITE 100
NORFOLK, VIRGINIA, 23551-2490

Request for Proposal

RFP-ACT-SACT-24-35

Digital Twin Proof of Concept

Amendment 1 (Changes in red font)

Bidding Instructions

RFP-ACT-SACT-24-35

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BIDDING INSTRUCTIONS

1. General

This is a Firm Fixed Price deliverables contract in accordance with the HQ SACT General Terms and Conditions; **Contract Award is contingent upon funding availability; Partial bidding is not allowed.**

HQ SACT General Terms and Conditions dated 03/13/2024 are applicable to this procurement and can be located on the ACT website at WWW.ACT.NATO.INT/CONTRACTING under **contractor information**.

2. Classification

This Request for Proposal (RFP) is a NATO UNCLASSIFIED document.

3. Definitions

- (a) The “Prospective Bidder” shall refer to the entity that has indicated thereon its intention without commitment, to participate in this RFP.
- (b) The term “Bidder” shall refer to the bidding entity that has completed a bid in response to this RFP.
- (c) The term “Contractor” shall refer to the bidding entity to whom the contract is awarded.
- (d) The term “Contracting Officer” designates the official who executes this RFP on behalf of HQ SACT.
- (e) “Contracting Officer’s Technical Representative” or “COTR” is the official who is appointed for the purpose of determining compliance of the successful bid, per the technical specifications.
- (f) The term “HQ SACT” shall refer to Headquarters Supreme Allied Commander Transformation.
- (g) The term “ACT” shall refer to Allied Command Transformation.
- (h) The term “NATO” shall refer to the North Atlantic Treaty Organisation.
- (i) The term “days” as used in this RFP shall, unless otherwise stated, be interpreted as meaning calendar days.

4. Eligibility

This RFP is open to governmental or commercial entities:

- (a) Established in a North Atlantic Treaty Organisation Alliance member nation.
- (b) Working in the required field of study and legally authorised to operate in the United States of America, at the time of bidding.
- (c) Has performed the desired past performance including size, cost and scope, as described in this RFP.
- (d) **All proposed key personnel on this requirement must be citizens of a NATO member nation.**

5. Duration of Contract

- (a) The contract awarded shall be effective upon date of award.
- (b) Period of Performance: on or about **06 May 2024** – 30 October 2024.

6. Exemption of Taxes

- (a) In accordance with the agreements (Article VIII of the Paris Protocol dated, 28 August 1952) goods and services under this contract are exempt from taxes, duties and similar charges.

7. Amendment or Cancellation

- (a) HQ SACT reserves the right to amend or delete any one or more of the terms, conditions or provisions of the RFP prior to the date set for bid closing. A solicitation amendment or amendments shall announce such action.
- (b) HQ SACT reserves the right to cancel, at any time, this RFP either partially or in its entirety. No legal liability on the part of HQ SACT shall be considered for recovery of costs in connection to bid preparation. All efforts undertaken by any bidder shall be done considering and accepting, that no costs shall be recovered from HQ SACT.

8. Bidder Clarifications

- (a) Prospective Bidders should seek clarification at their earliest convenience. Any explanation regarding the meaning or interpretation of this RFP, terms, clause, provision or specifications, shall be requested in writing, from the Contracting Officer. The Contracting Officer must receive such requests for clarification no later than 3 (three) calendar days prior to the bid closing date.

- (b) In lieu of a bidder's conference, HQ SACT invites bidders to submit initial technical and contractual questions not later than **3-April-2024 10 April 2024**.

- (c) Information in response to all inquiries / requests for clarification to a prospective bidder shall be furnished to all prospective bidders at the following link:
<http://www.act.nato.int/contracting> as a Question and Answer addendum. All such addendums and any necessary solicitation amendments shall be incorporated into this RFP. Oral Interpretations shall not be binding.

9. Bid closing date

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Bids shall be received at HQ SACT, Purchasing and Contracting Office, no later than ~~17- April-2024~~ **24 April 2024, 0900 hours, Eastern Standard Time, Norfolk, Virginia, USA.** No bids shall be accepted after this time and date. **No hard copy proposals will be accepted.**

10. Bid Validity

Bids shall remain valid for a period of one hundred and twenty days (120) from the applicable closing date set forth within this RFP. HQ SACT reserves the right to request an extension of validity. Bidder shall be entitled to either grant or deny this extension of validity. HQ SACT shall automatically consider a denial to extend the validity as a withdrawal of the bid.

11. Content of Proposal

A table of contents for the entire proposal:

- (a) The bidder's full name, address, Point of Contacts, Telephone, Fax number; Internet site;
- (b) Compliance statement (See Enclosure #1);
- (c) Past performance (See Enclosure #2); references will be accepted in lieu of past performance
- (d) Provision of technical and price volumes;
- (e) Compliance matrix (See Annex B to Statement of Work).

12. Proposal Submission

- (a) Proposals shall be submitted electronically in a two separate PDF documents, one containing the **Technical Proposal** and one containing the **Price Proposal**, each e-mailed separately to:

- Technical proposal: techproposal@act.nato.int
- Price proposal: priceproposal@act.nato.int

E-mail subjects shall include the solicitation information along with company name (for example: RFP-ACT-SACT-24-35_Tech_ABC Inc. / RFP-ACT-SACT-24-35_Price_ABC Inc.).

Allow sufficient time in your submission should you encounter e-mail size challenges.

- (b) **Price proposals shall be in U.S. Dollar currency.** Contractor may request payment post award in alternate currency based on agreed conversion rate.
- (c) Prices shall be on a **Firm Fixed Price Basis** and include any relevant discount schedule.
- (d) No oral bids or oral modifications or telephonic bids shall be considered.

- (e) It is the ultimate responsibility of a prospective bidder prior to submission that all proposal submissions are reviewed to ensure they meet the technical, contractual and administrative specifications and that offers meet the limitations and expressed conditions.

13. Late Proposals

- (a) It is solely the bidder's responsibility that every effort is made to ensure that the proposal reaches HQ SACT prior to the established closing date and time. Only if it can be unequivocally demonstrated that the late arrival of the bid package was the result of NATO staff negligence (mishandling) shall the bid be considered.
- (b) **A delay in an e-mail exchange due to server or size restrictions does not constitute a delay by NATO.**

14. Bid Withdrawal

A bidder may withdraw their bid up to the date and time specified for bid closing. Such a withdrawal must be completed in writing or facsimile, with attention to the HQ SACT Contracting Officer.

15. Bid Evaluation

- (a) The evaluation of bids and determination as to the responsiveness and technical adequacy or technical compliance, of the products or services requested, shall be the responsibility of HQ SACT. Such determinations shall be consistent with the evaluation criteria specified in the RFP. HQ SACT is not responsible for any content that is not clearly identified in any proposal package.
- (a) Due to the highly technical nature of these requirements, HQ SACT reserves the right to conduct pre-award discussions with proposed key personnel to accurately assess identified technical competencies. Discussions will be limited to scope of this RFP and the evaluation criteria identified.
- (b) Proposals shall be evaluated and awarded taking into consideration of the following factors:
- 1) Successful administrative submission of bid packages as requested in paragraph 11 and as listed in this RFP.
 - 2) Successful determination of compliance. (Compliant/Non-compliant).
 - 3) Technical factors / pricing factors rated the following: Technical / Price = 60/40 (Best Value Compliant Offer).
 - 4) Technical clarifications as determined may be conducted.
 - 5) Acceptance of HQ SACT General Terms and Conditions.

16. Proposal Clarifications

During the entire evaluation process HQ SACT reserves the right to discuss any bid with the order to clarify what is offered and interpretation of language within the bid, to resolve in potential areas of concern.

17. Award

HQ SACT intends to award a firm fixed price contract(s) to the Offeror(s) whose proposal(s) represents the Best Value Offer to NATO. Partial awards are not authorized.

HQ SACT will collect information from references provided by the Offeror in regard to its past performance. Contractors must provide authorization to contact references. HQ SACT reserves the right to negotiate minor deviations to the listed General Terms and Conditions to this RFP.

18. Communications

All communication related to this RFP, between a prospective bidder and HQ SACT shall only be through the nominated HQ SACT Contracting Officer. Designated contracting staff shall assist the HQ SACT Contracting Officer in the administrative process. There shall be no contact with other HQ SACT personnel in regards to this RFP. Such adherence shall ensure Fair and Open Competition with equal consideration and competitive footing leverage to all interested parties.

19. Points of Contact:

Tonya Bonilla, ACT Contracting Officer,
757-747-3575, tonya.bonilla@act.nato.int

LCDR Juan C. Benavides, ACT Contracting Officer
757-747-3804, Juan.benavides@act.nato.int

Robert McMaster, Sr. Agile Acquisition Analyst,
757-747-3869, robert.mcmaster@act.nato.int

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COMPLIANCE STATEMENT TO SEALED BID RFP-ACT-SACT-24-35

It is hereby stated that our company has read and understands all documentation issued as part of RFP-ACT-SACT-24-35. Our company proposal submitted in response to the referenced solicitation is fully compliant with the provisions of RFP-ACT-SACT-24-35 and the intended contract with the following exception(s); such exemptions are considered non substantial to the HQ SACT solicitation provisions issued.

<u>Clause</u>	<u>Description of Minor Deviation.</u>
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(If applicable, add another page)

Company: _____ Signature: _____

Name & Title: _____ Date: _____

Company Bid Reference: _____

Bidder's proposal must be based on full compliance with the terms, conditions and requirements of the RFP and all future clarifications and/or amendments. The bidder may offer variations in specific implementation and operational details provided that the functional and performance requirements are fully satisfied. In case of conflict between the compliance statement and the detailed evidence or explanation furnished, the detailed evidence/comments shall take precedence/priority for the actual determination of compliance. Minor or non-substantial deviations may be accepted. Substantial changes shall be considered non responsive.

Enclosure 2 Past Performance

PAST PERFORMANCE INFORMATION FORM (References may be submitted in lieu of past performance)

- (a) Contracting Entity:
- (b) Contract No:
- (c) Type of Contract (Firm Fixed Price, IDIQ, Requirements):
- (d) Title of Contract:
- (e) Description of Work Performance and Relevance to Current Acquisition (Type of facility, capacity, estimated patronage, summary of staff used):
- (f) Contract Dollar Amount:
- (g) Period of Performance:
- (h) Name, Address, Fax and Telephone No. of Reference:
- (i) Indicate Whether Reference Acted as Prime or Sub-contractor:
- (j) Comments regarding compliance with contract terms and conditions:
- (k) Complete Contact Information for client:
- (l) Permission to contact client for reference: Yes/ No

Name/Signature of Authorized Company Official

This Enclosure is designed to assist the respective company provide HQ SACT with all necessary documents/information required. For clarification, please refer to Bidding Instructions in part 1 of subject solicitation.

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Enclosure 3 Price Proposal

SEALED BID PRICE PROPOSAL

SUBJECT: RFP-ACT-SACT-24-35

Proposed rates must be fully “loaded” [G&A, O/H etc.], however they must not include per diem (meals & lodging) and travel. Travel (and related expenses) will not be covered under this contract, but handled separately in accordance with the ACT Financial Manual.

<https://www.act.nato.int/images/stories/budfin/afm24.pdf>.

SUBJECT: RFP-ACT-SACT-24-35

Please find on behalf of **Insert: Company Name** to provide HQ SACT with services (collectively referred as “ITEMS”), subject to the provisions, terms and conditions stated in RFP ACT-SACT-24-35 and the “**Insert : Company Name** Technical proposal”, submitted in accordance with solicitation provisions.

Deliverables (Refer to Annex A for further scope of each deliverable)	Performance Period (2024)	Cost
WP#1.1 Literature Review	01MAY – 31MAY	\$
WP#1.2 Encapsulation Design	01MAY – 31MAY	\$
WP#1.3 DT Integration Mechanism	01MAY – 31MAY	\$
WP#1.4 Design Report	03JUN – 28JUN	\$
WP#2.1 Modular Approach Implementation	01JUL – 01OCT	\$
WP#2.2 Digital Twin Composition	01JUL – 01OCT	\$
WP#2.3 One Day F2F Workshop	01JUL – TBD OCT	\$
WP#2.4 Final Report	01JUL – 31OCT	\$
TOTAL	01MAY – 31 OCT	\$

Please verify and acknowledge propriety of above, by duly completing signatures below.

Authorizing Company Official:

Printed Name: _____ Position: _____ Title: _____

Authorizing Company (Signature): _____, Date: _____.

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Company name Witness Official:

Printed Name: _____

Position: _____ Title: _____

Witness Signature: _____, Date _____

ANNEX A: STATEMENT OF WORK (SOW)
DIGITAL TWIN PROOF OF CONCEPT

1. Introduction

The Allied Command Transformation, Joint Force Development Directorate, Modelling Simulation and Learning Technologies (MSLT) Branch was tasked to lead development of NATO Next Generation Modelling and Simulation (NexGen M&S) capability programme while looking on the emerging technologies that can become a game changer from the long term perspective.

2. Background and Scope

a. Background. Digital Twin, AI and Quantum Computing have been identified as the critical technologies shaping the future of Modelling and Simulation as a scientific discipline¹.

NexGen M&S Capability Requirements Brief (CRB) contains a set of critical initial programme parameters. The most critical one describes requirement on architecture promoting modularity and interoperability among loosely coupled components via standardised system interfaces and widely accepted standards.

Another high level assumption made in the NexGen CRB mentioned that NATO NexGen M&S will develop a system that links on-the-horizon initiatives, such as creating digital twins and moving to massive simulations hosted in a metaverse scale environment.

In 2023 NATO Digital Transformation Implementation Strategy, there is a Level of Effort (LOE) on Modelling and Simulation Services that called for the development of a Single Synthetic Environment (SSE), where all intelligence disciplines feed their data and is used for training, war gaming, modelling and simulation, AI training, and the development of digital twins.

Therefore, there is a need to analyse and discover current gaps and deficiencies in these architectures, best practices, and standards for Modelling and Simulation domain in the perspective of the emerging technologies like Digital Twins. This would enable effective scoping and quality assurance of the project proposals of the NATO NexGen M&S programme and exploring benefits of having Digital Twins heavily implemented by Industry.

The contractor will develop a proof of concept of digital twin ²composition into a simulation

¹ NATO OPEN Publication on the Future of Modelling and Simulation. Volume 8. Number 5. 2023

² A Digital Twin is a virtual representation of a connected physical asset. The key word 'connected' indicates a synchronous and asynchronous exchange of data and a feedback loop between the model and physical asset [NMSG working definition].

system³, being able to replace a selected functionality (module) of the simulation system.

b. Contractor Support. The work in this SOW consists of two components:

- 1) Task 1 Summary.** Design a proof of concept capability. To include:
 - a) Research on integration of Digital Twin/s into a simulation system
 - b) Design a mechanism of Digital Twin integration into a simulation system following the current interoperability architectures, best practices and standards.
 - c) Report on the overall design

The work will consist of research, design, conceptual modelling and writing to explicitly described proposed Digital Twin integration demonstration. To be finished in June 2024.

- 2) Task 2 Summary.** Develop a proof of concept capability. This capability must be able to demonstrate modularity and reuse approach including:
 - a) Turning a simulation system module on and off.
 - b) Replacing a simulation system module by integration of Digital Twin by using current interoperability architecture, best practices and standards.
 - c) Demonstrating added value of having Digital Twin fully integrated within a simulation system.

The work will consist of implementation of the proposed mechanism in Task1, demonstration of a proof of concept and the final report writing to inform NATO NexGen M&S project proposal development/delivery and the required development to fully benefit of Digital Twin existence. To be finished in October 2024.

3. Type of Contract and Period of Performance

- a. Type of Contract:** Deliverables Contract.
- b. Period of Performance.** The contract period of performance is from **on or about 06 May** to 31 Oct 2024.

4. Tasking and Deliverables

The contractor will perform activities with the main deliverable of the proof of concept of Digital Twin integration into contractor's selected simulation system. There are two packages included in the project.

The Contractor shall produce the following deliverables:

³ *Simulation system is a combination of interacting elements or components organized to provide a representation of a system or of a part of the real world for an intended use. Example of simulation components are hardware, software, models, databases, human operators and procedures [NATO Terms].*

a. WP#1 Design proof of concept capability. Due Date: 28 June 2024

- 1) WP#1.1 Literature review and analysis of options to integrate Digital Twin into a simulation system.
- 2) WP#1.2 Design a way to enable encapsulating of a selected functionality in a simulation system to be later replaced by Digital Twin.
- 3) WP#1.3 A proposed mechanism to integrate Digital Twin into a simulation system employing current architectures, best practices and standards. Contractor needs to select minimum one Digital Twin to be integrated into a selected simulation system.
- 4) WP#1.4 Report on a design of the overall demonstration capability.

b. WP#2 Develop proof of concept capability. Due Date: 31 October 2024

- 1) WP#2.1 Implement modular approach in a simulation system by encapsulation of a selected simulation functionality for the later Digital Twin integration, as per WP#1.2 design.
- 2) WP#2.2 Compose a Digital Twin into a simulation system, as per WP#1.3 design.
- 3) WP#2.3 Preparation and facilitation of 1 day in-person workshop with presentation of main finding and execution of a demonstration capability to the NATO M&S community. Two people are expected to support the workshop organized in Europe.
- 4) WP#2.4 Final report containing gaps and lessons identified, proposed way ahead towards getting more granularity on operational need, deliverables, acceptance criteria and KPIs for modularity and reuse principles from Digital Twin perspective. There is a specific demand to cover by the report the following Capability Requirements:
 - a) Modular Open Architecture NexGen M&S should enable severable functionality and system components to be developed added, removed, or replaced separately and independently via a modular architecture.
 - b) Inclusion of new capabilities NexGen M&S shall enable the rapid inclusion of new components, user applications and technical services with an expected level of resources (e.g. time, procedural steps).
 - c) Open modelling standards NexGen M&S shall define open modelling standards for modelling simulation entities.
 - d) Extensibility NexGen M&S should enable independent development of compatible and pluggable content, functionality, and models.
 - e) APIs and interfaces NexGen M&S should enable the coupling of applications and services via standardized interface.

There is a specific demand to describe NATO Road Map for future DT development and its reuse in M&S.

5. Schedule of Delivery

Date	Deliverable
WP#1 Design proof of concept capability	
31 May 2024	WP#1.1 Literature Review
	WP#1.2 Encapsulation Design
	WP#1.3 DT Integration Mechanism
28 June 2024	WP#1.4 Design Report
WP#2 Develop proof of concept capability	
01 October 2024	WP#2.1 Modular Approach Implementation
	WP#2.2. Digital Twin Composition
TBD October 2024	WP#2.3 One Day F2F Workshop
31 October 2024	WP#2.4 Final Report

6. Acceptance Criteria

Acceptance criteria for the task includes, but is not limited to the following criteria. After each working package delivery, Contracting Officer's Technical Representative (COTR) will get a week to confirm the acceptance of the WP deliverables. If not complying with requirements, the company will get another 2 weeks to complete the WP as requested.

7. Contractor Performance Requirements and Reporting

The COTR shall be assigned by the Contracting Officer. The COTR shall provide direction, guidance, and support information as needed for all technical and content areas of the SOW.

The COTR shall:

- a) Resolve outstanding disputes, problems, deficiencies, and/or questions on the technical aspects of the SOW.
- b) Review (and approve) all Contractor duties for completeness and accuracy.
- c) Review the Contractor's work at a minimum of monthly, or more often if needed.

The COTR's written approval of work reported and deliverables submitted is mandatory for Contractor invoices to be successfully processed. The COTR shall receive a letter of appointment from the Contracting Officer that describes in detail his roles and responsibilities to which he shall sign formal acceptance.

8. Personnel Required for Statement of Work

Not Applicable

9. Time Requirements for Contractor Personnel

Not Applicable

10. Proof of Past Performance

The contractor is to provide a minimum of one past performance citations (for work within the past five years) to show that it has successfully completed work that is similar to or directly traceable to the requirements outlined in this SOW.

11. Place of Performance

Contractor's personnel are expected to perform the required work at the Contractor's facility with expectations of regular update meetings at HQ SACT, 7857 Blandy Road, Norfolk, or in alternate locations or by VTC as specified by the Contracting Officer's Technical Representative (COTR).

12. Required Travel for Personnel Service Contracts

Travel (and related expenses) will not be covered under this contract, but handled separately in accordance with the ACT Financial Manual, Section 24 "Contractor Travel". Additional travel requirements will be coordinated as needed.

13. Furnished Materials and Services N/A

14. Physical Security

Contractors do not require security clearances. However, contractors may be asked to sign non-disclosure agreements on insights obtained.

15. Security Consideration for the Deliverables

All work supporting the development of the narrative will be unclassified. The deliverables will not contain any sensitive information, will not be classified and, therefore, will not bear any classification markings.

ANNEX B: Grading Matrix**Best Value Grading Matrix to STATEMENT OF WORK**

Contractor technical proposal will be assessed based on criteria mentioned in the following table. HQ SACT reserves the right to conduct technical discussions with contractor. Ultimately, companies shall clearly demonstrate by providing unequivocal explanation to where and how it meets the criteria set forth in this solicitation. The Contractor must demonstrate their experience and expertise in the subject matter, in which will be graded in accordance with the Grading Matrix.

SER	ITEM	COMPLIANT	NOT COMPLIANT
1	The contractor is headquartered in one of the NATO Countries with proposed candidates that are citizens of and resident in NATO nations. (Nationality must be provided and any secondary or dual citizenships clearly specified).		
2	The contractor is to provide a minimum of one past performance citations (for work within the past five years) to show that it has successfully completed work that is similar to or directly traceable to the requirements outlined in this SOW.		
3	The contractor has a license of the simulation system to be used in the project.		
4	The simulation system is open to modification through well-defined API		
5	The contractor can provide a Digital Twin for integration		
SER	CRITERIA	RANGE ⁴	SCORE COMPLIANT (Out of 100 pts) ⁵
1	Experience with R&D related to the Modelling and Simulation	0 points - no experience or familiarity 1 - 5 points - familiar with theory and practical experience <5 years 6 - 10 points - Practical experience >5 years	
2	Experience with R&D related to the Digital Twin	0 points - no experience or familiarity 1 - 5 points - familiar with theory and practical experience <2 years 6 -10 points - Practical experience >2 years	

⁴ A score of "0" in any of the criteria categories will result in the bidder's proposal as being "Technically Non-Compliant."

⁵ A minimum total score of 51 is required to adequately meet the requirement for this solicitation. A proposal with a minimum total score of less than 51 will be graded as "Technically Non-Compliant."

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3	Experience with interoperability in Modelling and Simulation	0 points - no experience or familiarity 1 - 5 points - familiar with theory and practical experience <5 years 6 - 10 points - Practical experience >5 years	
4	Contractor's simulation system has been used in an experiment or an exercise.	0 points – not used at all 1 - 5 points – simulation system has been used in an experiment or an exercise, but not in an official NATO one 6 - 10 points – simulation system has been used in the NATO experiment or exercise [in MTEP]	
5	Contractor's simulation system covers operations in all military domains (Land, Air, Maritime, Cyber, Space)	0 points - Only 1 domain is covered 1 - 3 points - 2 domains are covered 4 - 5 points - 3 domains are covered 6 - 8 points - 4 domains are covered 9 - 10 points - all domains are covered	
6	Level of Maturity: Contractor's Digital Twin has high level of connection/data exchange between virtual and physical asset. [see Definition of DT in Background section]	0 points – not data exchange at all 1 - 5 points – only one way asynchronous data exchange 6 - 10 points – only one way asynchronous and synchronous data exchange 11 - 15 points – both ways asynchronous data exchange 16 - 20 points – both ways asynchronous and synchronous data exchange	
7	Describe how you want to integrate a Digital Twin into a simulation system	0 points -no explicit idea how to integrate DT into a simulation system 1 - 9 points- some ideas at the conceptual level 10 - 15 points – explicit design of DT integration into a simulation system containing how to maintain/benefit of data in a simulation system from synchronous/asynchronous data exchange	
8	Describe how you want to encapsulate a selected functionality in a simulation system to be replaced by a Digital Twin	0 points -no explicit idea how to encapsulate a selected functionality 1 - 9 points- some ideas at the conceptual level 10 - 15 points – explicit or already implemented design of a selected functionality encapsulation enabling its full composability	
	Max score: 100 points		

